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ABSTRACT

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The Library of Congress
Optical Disk Print Pilot Project
Staff Evaluation

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This project was conducted April-May 1985 and involved 62 public service librarians. The evaluation goals were to involve the staff during the implementation of this new technology and to collect data on these objectives: to measure satisfaction with training, documentation, equipment, printing, and system reliability; to identify materials to be scanned; and general satisfaction. Terminal logs, a message phone, three questionnaires, and group interviews were used to collect data. Staff were generally satisfied with the system, with some interesting exceptions. Staff suggestions, once implemented, will ease the incorporation of the optical disk into the Library's environment.

Table of Contents

	Page
Introduction	1
Objectives	2
Methodology	3
Results	5
Objective 1: To Identify Satisfaction With Training	5
Objective 2: To Identify Satisfaction with Documentation	6
Objective 3: To Identify Satisfaction With Equipment	8
3.1 Work Station	8
3.2 Screen Displays	8
3.3 Software	10
3.4 Keyboard	10
Objective 4: To Identify Satisfaction With Printer	11
4.1 Remote Printer	11
4.2 Convenience Printer	13
Objective 5: To Measure Reliability of System	14
Objective 6: To Identify Potential Groups of Material for Scanning Onto Optical Disk	16
Objective 7: To Determine General Satisfaction	17
Discussion and Conclusion	17

INTRODUCTION

The Optical Disk Pilot Program, begun in late 1982, is a four-year (1983-1986) program designed to assess the applicability of digital optical disk and analog videodisk technologies to library materials. The Library of Congress embarked on this project as a means to preserve high-use and rare materials and to provide rapid access to them. (1) The optical disk is being used to store printed materials, and the videodisk is being used to store visual materials.

This study focuses on the digital optical disk system. At this time, selected articles accessed via BIBL, one of the Library's online bibliographic files, are available on the optical disk system.

Patrons search the BIBL file by author, title, or subject. When the citations from a particular search are displayed, those which have the text available are noted. The user can then request the text. The black-and-white image of the document appears on the screen at a video resolution of 150 lines per inch by 300 lines per inch. Users can page forward and backward through the images of text.

Reader stations are located in four of the Library's reading rooms: Law, Main, Newspaper and Current Periodical, and Science. A fifth station is in the Congressional Research Service (CRS). Users have the option of reading the document on the terminal or printing it. The Newspaper and Current Periodical Reading Room has a Xerox 2700 convenience printer, and patrons in all stations can use a remote Xerox 5700 to generate offline prints. The

quality of the printers is identical, the differences are speed and convenience. (2)

Because of the nature of the Optical Disk Print Pilot Project and the evaluation objectives, this study is a description of the specific environment surrounding the project. (3) Since the focus is not on theoretical research, statistical manipulations were not included, for they would not enhance the data. Although this study is practical and not theoretical, it is hoped that it will encourage staff participation in the development of library systems and technologies.

OBJECTIVES

The major goal of the staff evaluation was to involve all levels of Library of Congress staff with the project and elicit their opinions on how the system can be improved before it is released to the public. The staff assisted in providing quick and early feedback on possible hidden problems within the system. Further, it allowed the staff to become fully familiar with the system in order to assist the public user better. Within this framework, there were seven specific evaluation objectives of the Optical Disk Print Pilot Project:

(1) to identify satisfaction with training,

(2) to identify satisfaction with documentation,

(3) to identify satisfaction with equipment,

(4) to identify satisfaction with printing,

(5) to determine system reliability,

(6) to identify potential groups of materials for scanning onto optical disk, and

(7) to determine general satisfaction.

METHODOLOGY

Following installation of the optical disk terminals in late March, each staff member received approximately one half hour of individual training, a group tour of the optical disk operations center, and an opportunity to hear welcoming remarks by William J. Welsh, The Deputy Librarian of Congress. All areas except the Law Library participated in the staff evaluation. Logs were placed near the terminal, and a message center phone was instituted. During March and April, informal opinions of the staff were collected as they began to use the system. When staff members signed onto the system, they were asked to note the time and date on the log as well as any impressions of the system.

In May, the staff participated in a more formal evaluation of the system by completing three questionnaires. (4) The questionnaires, entitled Training and Documentation, Equipment and Software, and Printing, were designed to address the objectives of the pilot program and the concerns of the senior managers of the project. Each questionnaire included a log. People were asked each time they accessed the optical disk system to note the system's status. The questionnaires were pretested, revised, and distributed to all professional staff from the Science and Newspaper and Current Periodical Reading Rooms. All staff from the Main Reading Room, Telephone/Correspondence/Bibliography, and Automation and Reference Collection Sections of the General Reading Rooms Division were also queried. Staff in the CRS participated voluntarily. System trainers in the reading rooms distributed and collected the surveys. Respondents' identities were anonymous to the evaluation team. The distribution and return rate for the questionnaires are given in Tables 1-3.

Table 1
Distribution and Return
Training and Documentation Questionnaire

Department	# Distributed	# Returned	% Returned
Main Reading Room	25	25	100
Science Reading Room	20	18	90
Newspaper and Current Periodical Reading Room	17	17	100
Total	62	60	97
Congressional Research Service	20	9	45

Table 2
Distribution and Return
Equipment and Software

Department	# Distributed	# Returned	% Returned
Main Reading Room	25	25	100
Science Reading Room	20	18	90
Newspaper and Current Periodical Reading Room	17	17	100
Total	62	60	97
Congressional Research Service	20	6	30

Table 3
Distribution and Return
Printing Questionnaire

Department	# Distributed	# Returned	% Returned
Main Reading Room	25	24	96
Science Reading Room	20	18	90
Newspaper and Current Periodical Reading Room	17	17	100
Total	62	59	95
Congressional Research Service	20	4	20

In early June, three one-and-a-half hour blocks of time were scheduled for group interviews with librarians from the Main, Newspaper and Current Periodical, and Science Reading Rooms. Participation was voluntary, with a total of 18 of 62 librarians attending. Along with a discussion of how they perceived the system, the librarians were asked their opinions on certain key policy issues.

RESULTS

The questions below do not reflect the format of the questionnaires. They have been rearranged to facilitate clear presentation of results, and some instructions and all open-ended questions have been omitted. The instructions which are needed to understand the results are in Boxes A-F. Comments from open-ended questions are summarized at the end of each objective. The percentages were rounded to the nearest whole number, with "N" being the number of people who answered each question. CRS is not included in these tabulations.

Objective 1: TO IDENTIFY SATISFACTION WITH TRAINING

How often do you use the BIBL file?

N=50

20% rarely
54% moderately
26% extensively

Was the orientation and training you received sufficient to make you feel comfortable about trying the system?

N=51

80% yes
12% partially
6% no

Approximately how long was your training?

N=51

59% 0-30 minutes
29% 31-60 minutes
8% 61-90 minutes
4% 91-120 minutes

During the training period, did you have an opportunity to "play" with the system?

N=50

86% yes
14% no

Would you have liked further instruction?

N=51

45% yes, (check all that apply)
- 52% using information screens
- 48% moving from citation to text
- 39% moving from text to citation
- 35% moving from page to page of text
- 39% printing online
- 52% printing offline
- 52% creating sets
- 61% using limit commands
- 52% other

55% no

Staff were pleased with their optical disk training. System down time was the cause cited by those saying they were only partially satisfied. No trends could be established among respondents desiring further instruction. There was an even split between those interested in specific optical disk manipulation and those needing assistance in accessing software.

Objective 2: TO IDENTIFY SATISFACTION WITH DOCUMENTATION

Box A

Imagine that you are approaching the Optical Disk terminal for the first time. Use the printed manual "Searching in the Optical Disk Information System..." to guide your steps and search the term "China". (You may wish to limit this set by "text").

Display the first document in your set. Page forwards and backwards. If your terminal is connected to a printer, copy the second and last page of the document and attach it to this questionnaire. Print offline the fifth document in your set, instead of your name type "test" as the requester.

Did you have any problems completing this task. (See Box A)

N=51

27% yes
73% no

What kinds of problems did you experience? Check all that apply.

N=17

24% signing on
18% creating a set
35% display text
18% paging forwards/backwards
6% copying the pages online
18% printing the document offline
6% ending the search
0% limiting
24% other

Does the manual cover all the current and/or potential uses you can envision of the Optical Disk System?

N=44

75% yes
25% no

Do you think a patron coming to the OD terminal could successfully use this manual to retrieve text?

N=46

57% yes
43% no

Box B

Please END your previous search, and return to the menu screen. Choose menu option #2, for information about searching the BIBL file and viewing the full text of documents.

Would this information enable a patron to do a search online? (See Box B)

N=50

40% yes
44% partially
16% no

Box C

Choose menu option 4, for background information on the Optical Disk Pilot Program.

Do you have any suggestions for improving these screens? (See Box C)

N=47

74% no
26% yes

Does the "Gone to the Stacks" message* help you feel comfortable while waiting for the text to appear on the screen?

N=45

62% yes
31% partially
7% no

*This message appears between the time text is requested and the text is displayed. In several paragraphs, it explains how the system displays an image on the screen.

A large number of respondents (12 of 22) felt that a patron's previous knowledge of The Library of Congress databases would effect how successfully they could conduct a search. It was believed by four staff members that the manual should provide standard search information or that search instruction flipcharts be attached to the Optical Disk Manual. When comparing the manual and menu option 2, a majority of respondents (eight) felt that a hardcopy version is more useful, particularly for the naive user. Three suggestions to improve on the information screens appeared consistently: to shorten the screens, write them with less jargon, and be consistent.

Two-thirds of the respondents felt comfortable with the "Gone to the Stacks" message; however, there was some feeling that the message is fine the first time, then becomes repetitious and boring. Ten respondents believed that some indication of length of time before system response, potential time delays, and what one should do after a certain amount of lapsed time would be beneficial.

Objective 3: TO IDENTIFY SATISFACTION WITH EQUIPMENT

3.1 WORK STATION

As you sit at the Optical Disk Station, do you have adequate writing space?

N=52

75% yes
25% no

Do you have sufficient light to read printed materials near the work station?

N=52

100% yes
0% no

Clearly, staff felt the work stations are acceptable. The writing space was adequate in Science and Newspaper and Current Periodical Reading Rooms. In the Main Reading Room, approximately half the people reported that the writing space was cramped and awkward for right-handed persons.

3.2 SCREEN DISPLAYS

What is the longest approximate time you have read text from the screen?

N=48

60% 1 - 5 minutes
32% 6 - 15 minutes
8% 16 - 30 minutes
0% 31 - 60 minutes
0% more than 60 minutes

For how long do you think you would be able to read text comfortably from the screen?

N=47

15% 1 - 5 minutes
34% 6 - 15 minutes
30% 16 - 30 minutes
8% 31 - 60 minutes
13% more than 60 minutes

Have you encountered problems while trying to read text from the image screen?

N=46

57% yes, check all that apply
- 30% screen image flickers
- 23% images too bright
- 4% images too dim
- 46% surface glare
- 27% blurry image
- 35% unable to read very small print
- 42% other

43% no

Have you encountered problems while looking at graphic or picture images?

N=45

56% yes, check all that apply
- 24% needed color to interpret display
- 40% halftones were indistinct
- 20% blurry image
- 44% fine detail missing
- 16% screen flickering
- 32% surface glare
- 8% other

44% no

Box D

Please compare the screen image from LRS80-15568 image 4 with attachment D. (Attachment A had small print and foreign text.)

Do you think a patron would ever need to look at the original page or a copy of the original page in order to fully utilize the information presented? (See Box E)

N=44

70% no
30% yes

Box E

Please compare the screen image from LRS84-1110 image 2 with attachment B. The caption for this map is on images 1 and 2. (Attachment B was a color map, where the color eased interpretation of the data.)

Do you think a patron would ever need to look at the original page or a copy of the original page in order to fully utilize the information presented? (See Box E)

N=44

32% no
68% yes

Of those people citing problems while reading from the screen, four people complained of lines through the text, and three stated there was a loss of print, or blank sections on the screen. Another four staff members suggested that the screen be tiltable in order to eliminate some of the difficulties in reading. A tilting screen might have assisted those respondents who felt that the angle and glare on the screen contributed to the difficulties in reading small print. Staff had difficulties viewing color images, with 30 respondents stating that the screen's approximation of gray scale was insufficient to delineate the colors, thus making interpretation difficult. Three persons commented that it was difficult to read letters originally imposed on color.

3.3 SOFTWARE

While viewing images on the Optical Disk System, have you encountered incomplete or incorrect documents?

N=45

47% yes, please check all that apply
- 29% missing pages with no message
- 86% "image unavailable" message
- 52% "portions missing" message
- 67% "technical problems" message
- 14% article/BIBL citation mismatched
- 14% other

53% no

Can you move back and forth between the bibliographic citation and the text?

N=45

87% yes
11% somewhat
2% no

Respondents are generally satisfied with the optical disk software. About half have encountered incomplete or incorrect documents.

3.4 KEYBOARD

Are the function keys arranged so you can find the one(s) you need?

N=47

83% yes
15% somewhat
2% no

Do the function keys perform the action expected, based on their labels?

N=45

93% yes
7% somewhat
0% no

What new keys would you like to see?

N=46

54% sign on
49% sign off
69% display text
38% display citation
51% limit text
8% other(s)
15% none

Are there any superfluous keys?

N=39

41% yes
59% no

Although the arrangement of function keys met overwhelming approval, four respondents in the "somewhat" category felt that the enter key was too far right. Suggestions for new keys ranged from "display text" to "return from text" to "citation set" and a "cancel command" key. Seventeen people identified more than a dozen different keys as superfluous, many of which are essential to system usage. A detailed explanation of the keyboard is necessary, perhaps in the manual.

OBJECTIVE 4: TO IDENTIFY SATISFACTION WITH PRINTING

4.1 REMOTE PRINTER

Box F

Choose an article, preferably one which has pictures or other fine details, and examine the images on the screen. Please order offline the entire article, entering your name as the requester.

Did you receive the article you ordered? (See Box F)

N=41

80% yes
20% no

How many days did it take for you to receive your offline printout?

N=37

52% 0 - 1 day
38% 2 - 3 days
8% 4 - 5 days
2% more than 5 days

Would this turnaround time be adequate for your average patron's needs?

N=38

53% yes
47% no, please comment:

Are any pages missing?

N=35

71% no
29% yes, specify which ones

Are you satisfied with the overall quality of the image?

N=13

69% yes
31% no (check all that apply)
- 27% text blurred
- 45% black lines
- 18% too dark
- 9% too light
- 45% top chopped off
- 18% bottom chopped off
- 73% poor contrast
- 18% other

To the best of your knowledge, are the fine details legible?

N=36

53% yes
42% no
5% not applicable

Eighty percent of respondents received the article they ordered, 51 percent within a day. Staff were evenly divided on whether this turnaround time would be adequate for patrons. Fourteen of 16 people commenting in the questionnaire felt that same-day service was essential, particularly for out-of-town users. The majority of those participating in the interviews believed next-day service would be satisfactory. Fine details which tended to be illegible included bar graphs, some photographs, characters on multicolor images, and fine details such as cursive writing on old documents. Twenty-nine percent had pages missing from their document, and 31 percent were not satisfied with the quality of the image, thus prompting the comments that print reliabilty must be improved before charges are installed. The administrative procedures for printers was discussed at the interviews. Staff tended to feel that the cost for offline printing should be less than convenience printing, thus encouraging patrons to use the batch method. A serious concern arose about maintaining convenience printers; changing paper, making change, and the like are annoying with the current photocopiers and will only increase with the advent of convenience printers.

4.2 CONVENIENCE PRINTER (Newspaper and Current Periodical Staff Only)

In your experience are the copies made by the convenience printer legible?

N=13

92% yes
8% no

How would you rate the printer's reliability?

N=13

8% poor
77% adequate
15% excellent

Are you satisfied with the overall quality of the image?

N=13

69% yes
31% no (check all that apply)
- 75% text blurred
- 25% black lines
- 0% too dark
- 25% too light
- 0% top chopped off
- 0% bottom chopped off
- 0% poor contrast
- 0% other

To the best of your knowledge, are the fine details legible?

N=12

58% yes
42% no
0% not applicable

How does your printout compare to the image on the screen?

N=11

18% more legible
64% same legibility
18% less legible

Staff members in the Serial and Government Publications Division were asked to comment on the convenience printer. Percentages on overall quality and fine detail legibility were comparable for convenience printing and offline printing, although difficulties with the images varied. The legibility was felt, by the majority, to be the same as that on the screen, prompting two commentors to say the copies were as easy to read as photocopies.

Objective 5: TO MEASURE RELIABILITY OF SYSTEM

For Objective 5, data from CRS was incorporated into the results from other reading rooms. The logs from March and April indicate that half of the recorded attempts to access the system were successful. Table 4 shows the data recorded in May as people approached the system to complete their questionnaires. These data are hard to substantiate as BIBL system problems are difficult to separate from optical disk system problems. When BIBL is down, the optical disk system cannot be accessed. Use of both the terminal and questionnaire logs was sporadic and any findings are inconclusive. Scheduled stress tests and data from the questionnaire logs indicate that the system works well when multiple users (up to five, the current maximum) are signed on.

Table 4

System Reliability -- May

	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-1:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00	5:00-6:00
5/6							▽			
5/7	▼		⧩	▼			▼	▼		
5/8	⧩	▼	▼	⧩:▼	▽	▽	⧩ ▼	▼		
5/9	▽:⧩	▼		▼			▼		▼	▼
5/10	▼	▼	▼			▼		⧩		
5/13	⧩	⧩	▼	▼		▼	▼	▼		
5/14	▽	▽:⧩	▼	▼		▼		▼		
5/15		▽	▼		▼	▼		⧩	▽:▼	
5/16						▼	▼	▼		
5/17					▼	▼		▼		
5/20	⧩	▼	▼	▼			▼			
5/21	⧩	⧩ ▼	⧩	▼		▼			▼	
5/22		▼:⧩	▼			⧩	⧩:▽			
5/23	▼:▽	▼	▼			▼	▽	▼	▽	
5/24		▽ ▼	▼	▽		▼		▼	▼:⧩	
5/27		▽				▽				
5/28							⧩	▼		▼:⧩
5/29		⧩ ▼		▼	⧩	▼		▼	▼	▼
5/30			▼		▼	▼			▼	
5/31		▽			▼	▼	▼			

▼ BIBL and Optical Disk System Up

⧩ Optical Disk System Down

▽ BIBL Down

Note: Two symbols within a box separated by a dotted line indicates that the system's status changed within that time period. Two symbols within a box without a dotted line indicate that conflicting data for that time period was reported by the reading rooms.

Objective 6: TO IDENTIFY POTENTIAL GROUPS OF MATERIAL FOR SCANNING ONTO OPTICAL DISK

As part of this pilot project, the Library is determining how best to use the optical disk technology for preservation and access. At the interview session, staff were asked, "What kinds of materials are best suited to this technology?" Staff felt that the optical disk was not suited for high-use current periodicals unless many more terminals were installed, for example, 20 in the Newspaper and Current Periodical Reading Room. High-use periodicals, however, are the next format scheduled for scanning onto optical disk. One alternative was to scan specialized high-use items such as the SAMS Photofact Service (appliance repair), the Physicians Desk Reference, and other items that are hard to control such as the Congressional Record and Federal Register. Other suggestions that met with general approval were items locked up for their own protection--issues of Playboy, the comic book collection (color was not seen as a major problem), and the pulp fiction collection. United Nation and foreign documents on disk also met with approval as these items are hard to control. U.S. Government documents on disk met with mixed reaction since many librarians felt the problem here was access through indexes and not to the item itself. Other suggestions were the "x" collection,* the sample file,+ association newsletters, foreign language technical materials, BIBL items listed as not in the Library of Congress and Tracer Bullets.#

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*Pamphlets having a call number beginning with X.
+Serials not in the collections, of which the Library has only one sample issue.
#Four- to eight-page handouts designed to assist users in finding information on high interest topics.

Objective 7: TO DETERMINE GENERAL SATISFACTION

User satisfaction is always a difficult item to measure, particularly with staff who may feel that they are evaluating their own abilities. In general, the questionnaires and interviews show the staff is interested and satisfied with the optical disk system. They realize that as the system enters into production, system bugs will be worked out. One respondent wrote, "In spite of minor complaints, all in all, I think the whole idea of this system is wonderful," which seems to characterize overall feeling for the print pilot project.

DISCUSSION AND CONCLUSION

The staff did not uncover any major flaws in the technology, and their feedback gave the Library useful information about how to change the environment to make the technology easier to use. The evaluation project offered the staff a chance to be involved formally in the implementation of a new technology. This was important both for data collection and for the staff's acceptance of new responsibilities.

A half hour of individual training appears to be the minimum time needed to integrate a new system into the workflow. When the system is ready for public access, "refresher" training sessions should be scheduled. Staff offered many specific suggestions for improving the printed and online documentation. Work stations are adequate. Some of the problems experienced while reading images from the screen may be alleviated by altering the work station, as by installing tiltable screens. However, until the technology can affordably provide color, or enlargement of details on the screen, the Library may wish to use discretion in choosing materials for

scanning. A large percentage of people has experienced problems viewing documents on the screen: however, the source of these difficulties is often unclear. The data under Objective 3.2 will help the technical people to assess the magnitude of each of the problems and to determine how to allocate resources for their correction. Comments about the keyboard clearly point to the need for a labeled chart with explanations in the manual. Many necessary keys were listed as superfluous. The wide range of suggestions for new keys also points to the need for mock keyboards to be made up and tested before final keyboards are ordered. Most users of the optical disk system will use the offline printing facility. Current procedures require that printouts are delivered the next day. This may cause problems for some of our clients, especially those from out of town. The impact of this limitation will be strongly affected by the materials chosen for inclusion on the disk--for example, are copies available more quickly from elsewhere in the Library? The problems experienced with print quality can be alleviated somewhat by a judicious choice of materials to be scanned. The staff's opinions about good candidates for inclusion were materials that are hard to access. Library staff members look forward to the time, not too far from now, when a patron can sit at a terminal and search and access the Library's resources easily.